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ABSTRACT

The presentation describes PILOT (Programmed Inquiry, Learning or Teaching), a special programing language easy for beginners to learn and available for several brands of microcomputers. PILOT is explained to contain substantially fewer commands than most other languages and to be written in an easy to understand manner. Edit commands and their responses are indicated as are commands when PILOT is used on the Apple microcomputer. A demonstration lesson is presented. The paper concludes with eight guidelines for computer assisted instruction, including personalizing the lesson, using graphics and sound effects to motivate the students, and supplying instructionally appropriate helps to students when they miss items. (CL)

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PILOT

A PROGRAMMING LANGUAGE FOR BEGINNERS

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A Paper Presented at the Council for Exceptional
Children's National Conference on the Use
of Microcomputers in Special Education

Hartford, Connecticut
March 10-12, 1983

PILOT: PROGRAMMED INQUIRY, LEARNING OR TEACHING

PILOT is the name for a special programming language which is easy for beginners to learn. The name PILOT stands for programmed inquiry, learning or teaching. The language contains only 22 different commands; this is substantially fewer than most other languages. In addition the command codes feature common vernacular that is readily identifiable and easily learned.

PILOT is available for several brands of microcomputers including Apple, Radio Shack and Atari. This presentation focused on the PILOT program produced by APPLE.

Apple PILOT requires at least 48K bytes of memory and two disk drives. The Author disk, containing all the special language control features, is inserted into drive one and the Lesson disk is placed into drive two. Lessons that are created for student use are stored on the Lesson disk. Lesson disks can be run on single drive systems; but two drives are required for creating Lesson disks.

The Author disk contains four different editors: the lesson text editor, the character set editor, the graphics editor and the sound effects editor. The lesson text editor stores text including words, numbers, etc. and all the commands that control the lesson. The character set editor stores any set of characters that you design; this could include Japanese or Chinese character sets. The graphics editor stores pictures, maps, diagrams, etc. that can be used when the lesson is run. The sound effects editor stores music and other sound effects that can be used. This presentation focuses on two of these editors: the text editor and the graphics editor.

The commands that control many of the features of the lessons are listed and described in Tables 1 and 2. The text for a short lesson appears in Table 3; it illustrates the format that must be used when programming. A flow chart of the lesson appears in Table 4; the flow chart is used to check the subroutine and jumps within the program.

Numerous PILOT lessons were played during the demonstration. In addition some Computer Assisted Instruction (CAI) Guidelines were discussed and illustrated. Some of these are listed in Table 5.

TABLE 1

KEY BOARD CONTROLS

Edit Commands

I	Insert text at that point of lesson
D	Delete text specified
Q	Quit lesson; allows lesson to be saved
C	Copy a portion of the lesson
F	Find a specific word or phrase
J	Jump to a specific location within the lesson
R	Replaces a group of letters with a new group (procedure could replace a misspelled version-procedure)
X	Exchanges letter(s)
ESC	Accepts and records changes in lessons
CTRL-C	Returns to prompt line without executing previously specified edit command

TABLE 2

APPLE PILOT COMMANDS

Command/Options	Meaning of Command
R:	Remark: notes for the programmer
D:A$(20)	Dimension: reserves 20 spaces for storing a defined (A) string variable (student's name) that is defined as _A_ later in the program.
PR:	Problem: controls the handling of student typed responses.
L	Converts all response letters to lower-case.
U	Converts all response letters to upper-case.
S	Removes all spaces from responses.
T:.....	Type in text, instructions, etc., for student (must be typed in order to create a new line of text).
TH:...	Type Hang: allows student's response to be typed on same line.
A:	Accepts response from student (creates a storage space for a response).
M:	Match student response with this answer.
!	Matches with either answer (apple!pear)
&	Matches with all parts of answer in same order (3 & 6 & 9)
*	Allows any letter to be counted as correct in order to compensate for spelling errors (Maryland/m*r*l*nd/meriland)
AS:	Accept a single character response and continue on to the next instruction.
MS:	Allows one letter misspelling on a match.

TABLE 2 Continued

W:n		Wait: waits for specified time (seconds).
G:		Graphics effects:
	ES	Erases screen.
	ESn	Erases screen to color specified below.
	Ø	Black
	1	Green
	2	Violet
	3	Whitel
	4	Black2
	5	Orange
	6	Blue
	7	White2
	8	Reverse
GX: FILE NAME		Execute the graphics file named.
JY: LABEL		Jump: Jump to LABEL (names for subsections of lessons) when answer is Yes.
JN: LABEL		Jump: Jump to LABEL when answer is incorrect.
SX:		Sound effects: execute the musical accompaniment in file named.
	Lafbird Lone Range Beethoven	
E		End program

TABLE 3

```
r:This is a demonstration lesson to be
:used at the CEC Microcomputer
:Conference in Hartford, Conn., March
:1983.
pr:u,s
d:a$(20)
t:
t:
t:
t:
t:
t:      Demonstration Lesson
t:
t:          Created by
t:
t:      Dr. Janice M. Schnorr
t:
t:          Spring 1983
w:5
g:esØ
t:
t:
t:
t:
t:
t:      HI!
t:
t:   What's your name?
t:
th:  Type it here
a:$a$
g:esØ
t:
t:
t:
t:
t:    Hi, $a$ !
w:3
t:   Today I want to ask you a
:question.
w:2
t:
t:  Remeber to think about
:your answer
t:
t: before typing it.
t:
th:  Type any key to begin.
as:
m:*
j:probl
t:
w:2
th:Type your answer here.
a:
m:7!SEVEN!S*V*N
jy:ritel
j1:help1
j2:help2
j3:help3
j4:help4

*ritel
g:esØ
gx:happyface!
sx:loneranger
j:end

*help1
t:
t:
t:
t:
t:        OOPS!  $a$
t:
t:     That's not correct.
t:
w:2
t:     Try it again.
j:probl

*help2
t:
t:
t:
t:
t:     Not quite $a$
t:
t: Say the days and count them.
w:5
j:probl

*help3
g:esØ
t:
t:
t:
t:  Let's count the days together.
t:
t:      Monday      1
t:
w:1
t:      Tuesday     2
w:1
```

TABLE 3 Continued

```
t:
t:       Wednesday     3
t:
w:1
t:       Thursday      4
t:
w:1
t:       Friday        5
t:
w:1
t:       Saturday      6
t:
w:1
t:       Sunday        7
w:5
j:probl

*help4
t:
t:
t:
t:
t:
t:                NO, $A$
t:
t:  There are 7 days in a week.
w:5
t:
g:esØ
t:
t:
t:
t:
t:
t:
t:
t:  You will need to review this lesson
t:
t:           again tomorrow.
j:end

*end
g:esØ
t:
t:
t:
t:                   The End
w:5
e:end
```

TABLE 4

DEMONSTRATION FLOW CHART

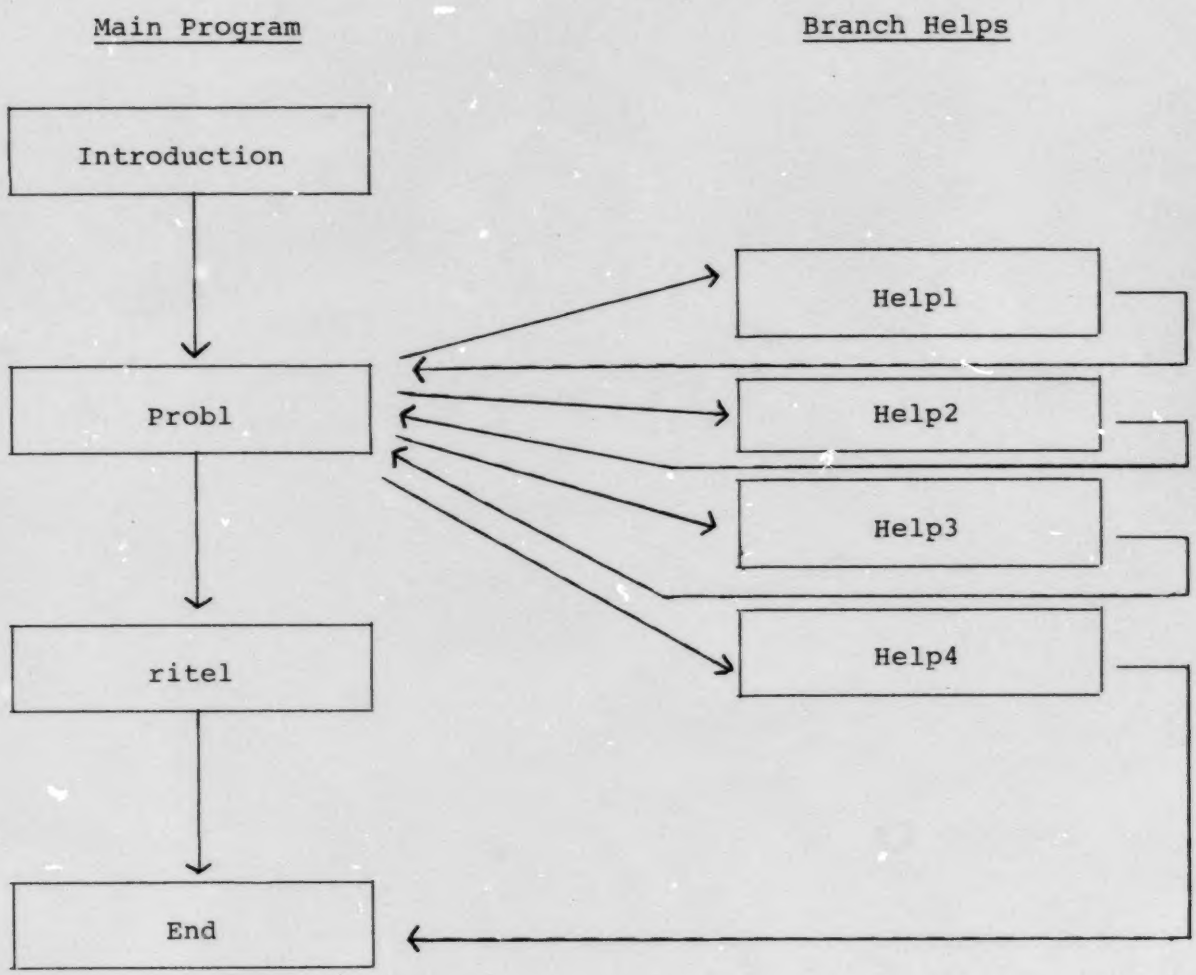

TABLE 5

CAI GUIDELINES

1. Double space all text.
2. Limit text on each screen.
3. Use wait commands often so that students have ample time to read the text.
4. Create new pages frequently to prevent scrolling.
5. Personalize the lesson using the student's name.
6. Use the "type hang" (TH) command to allow the students ample time to respond to the question.
7. Use graphics and sound effects to motivate students but do not over use or misuse them.
8. Supply instructionally appropriate helps to students when they miss items.